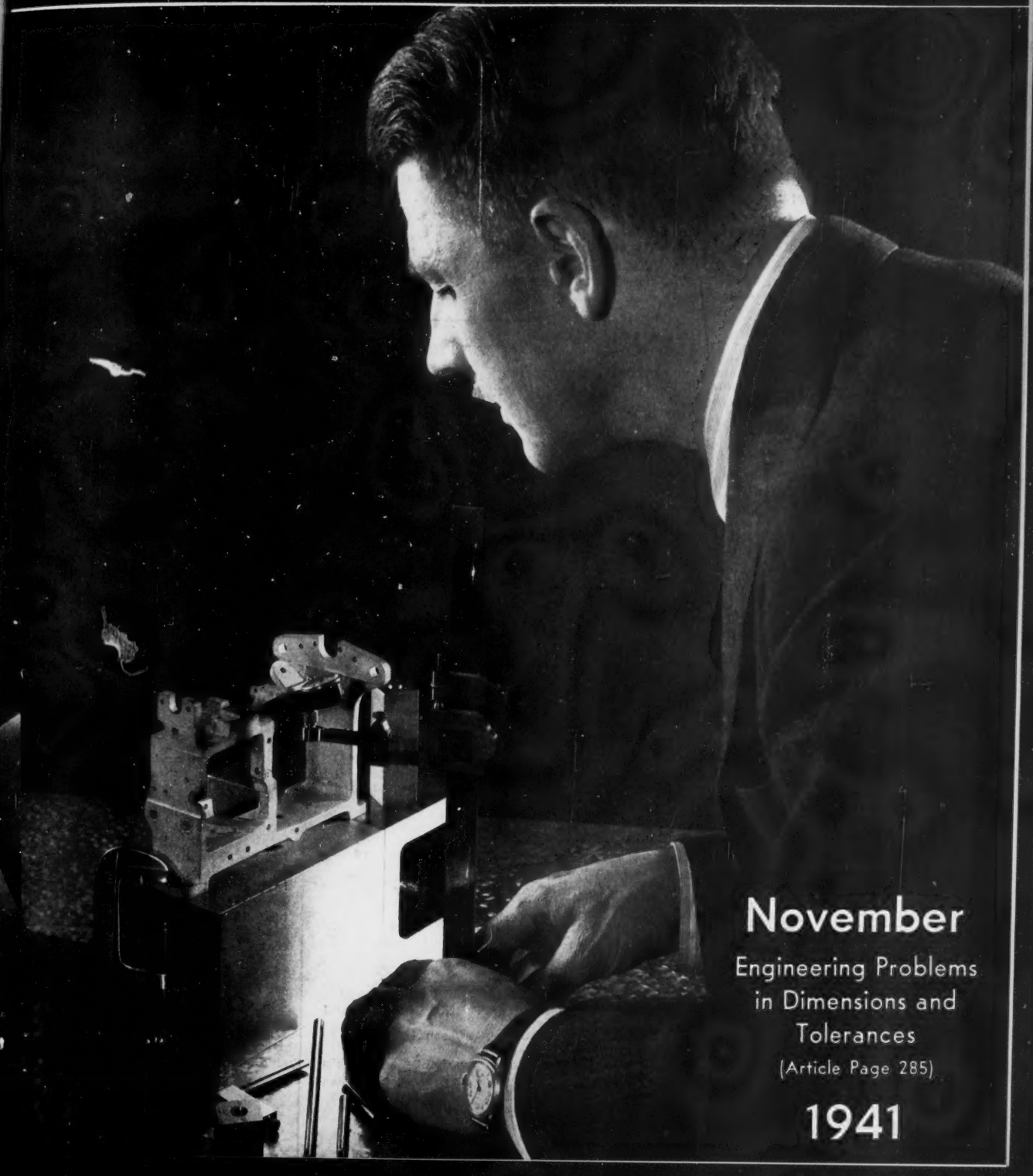
Industrial Standardization

and Commercial Standards Monthly



November

Engineering Problems in Dimensions and Tolerances

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1941

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Our Front Cover: Measurements being made on a switchframe by an engineer of the Bell Telephone Laboratories.

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STANDARDIZATION activity has been greatly increased in all English-speaking countries in order to bring into being the vastly increased and properly defined production of the most suitable type and quality necessary to satisfy the war emergency needs. During the present war exigency it has been established on the most competent authority that the full application of the principle of standardization is cardinal and basic to the successful prosecution of every phase of the war effort. In this connection it is of interest to note that 150 War Emergency Standards have been received from England and Australia. . . .

These provide striking evidence of the important contribution which standardization is making towards the effective prosecution of the war.

—New Zealand Standards Institute, Annual Report, 1941.

Engineering Problems in Dimensions and Tolerances[1]

by W. W. Werring

Member, Technical Staff Bell Telephone Laboratories

On what dimensions of a part should tolerances be given? How large should these tolerances be and from what reference line or plane should they be measured? What effect has a tolerance on the functioning of a part? These are questions of fundamental importance in modern manufacturing. Our readers should be interested in the way they are discussed here by Mr. Werring.

Raw Material Sizes

MANY in industry have probably grown used to the standard gages in particular fields but though gage numbers were undoubtedly initiated as a simplified identification the variety of gages and the variety of names for the same gage now merely increases confusion. Sheet metals are handled in terms of a number of gages such as B&S gage, U.S. standard gage and Bwg gage; and sheet soft rubber is even designated in decimals of $\frac{1}{64}$ such as $\frac{4.3}{64}$ in. It has become good practice to specify sizes by decimal dimension values and not by gage numbers and holes by actual decimal size rather than by drill numbers. The actual sizes used, however, are determined in many cases by the values corresponding to old gage numbers long used commercially, though in large running items mills will and do manufacture to any specified decimal size. For some time it has been the practice of material manufacturers and other large industries thus to discontinue the use of gage numbers though still using the decimal values of gage sizes.

There is now under way an effort, organized under committee B32 of the American Standards Association, to eliminate the old wire and sheet metal gage systems entirely and set up a rational series of American standard thicknesses for all metal sheets and preferred diameters for wire, and insure availability in these sizes. The basic conception of a rational series of sizes is that a uniform degree of choice should be presented between successive sizes. Therefore each size should differ from the next by a fixed percentage. The series should therefore be geometric. A variety of geometric series could be used but in order to permit extending the series indefinitely by shifting the decimal point, the particular series based on the root of 10 has been established internationally as the Preferred Numbers Series for standard sizes. The 5 series is one having 5 numbers between 1 and 10 (or between 10 and 100) and is produced by using as the multiplier the fifth root of 10; the 10 series is produced by multiplying by the 10th root of 10; the 20 series by multiplying by the 20th root of 10, etc. The complete Preferred Number Series is explained and listed in various forms in American Standard Z17.1-1936.[2]

The subcommittee working on the sheet metal sizes has recently issued a proposed American Standard of preferred thicknesses for all uncoated flat metals thinner than .250 in. These thicknesses are all decimals based on the 20 series of preferred numbers rounded in the standard manner to 3 decimal places. The Preferred Numbers and

[1]This article is an abstract from an article by Mr. Werring published in full in the *Bell System Technical Journal*. A second section on Functional Dimensions, covering effect of tolerances, functional datum positions, invariable or gage dimensions, and practical use of datum lines and planes, will be published in an early issue of INDUSTRIAL STANDARDIZATION.

[2]The American Standard for Preferred Numbers (Z17.1-1936) is available from the American Standards Association at 25 cents.

Our Front Cover

Measurements being made on a switchframe by an engineer of the Bell Telephone Laboratories. This switchframe is used as an illustration in the second part of Mr. Werring's article where tolerances are discussed in connection with Functional Dimensions.

Decimal Series of Preferred Numbers 10-100			Proposed Preferred American Standard Thicknesses		
5 Series $\sqrt[5]{10} = 1.6$	10 Series $\sqrt[10]{10} = 1.25$	20 Series $\sqrt[20]{10} = 1.12$	Under .010	.010 to .100	.1120 to .250
10	10	10		.010	
		11.2		.011	.112
	12.5	12.5		.012	.125
		14		.014	.140
16	16	16		.016	.160
		18		.018	.180
	20	20		.020	.200
		22.4		.022	.224
25	25	25		.025	
		28		.028	
	31.5	31.5		.032	
		35.5		.036	
40	40	40	.004	.040	
		45		.045	
	50	50	.005	.050	
		56		.056	
63	63	63	.006	.063	
		71	.007	.071	
	80	80	.008	.080	
		90	.009	.090	
100	100	100		.100	

TABLE 1

the proposed thicknesses are shown by Table 1. It happens that this series closely approximates the Brown and Sharpe gage used in the nonferrous metals which simplifies that portion of the changeover. If this proposed American Standard is generally approved, as now appears most promising,[3] we will be able to choose thicknesses of any metal interchangeably without the restrictions of ancient gage sizes established for reasons which were possibly good and sufficient but which certainly have long been forgotten. Meanwhile, another subcommittee is investigating the possibility of applying a similar series to the diameters of wire. Probably diameters to four decimal places will be required.

Dimensional Tolerances

Part Tolerances

Regardless of the dimension decided upon in a design it is obvious that it cannot be regularly manufactured to the exact size. Certain manufacturing variations or tolerances must be expected and these introduce a large share of our dimensional problems.

The usual statement on tolerances is that the

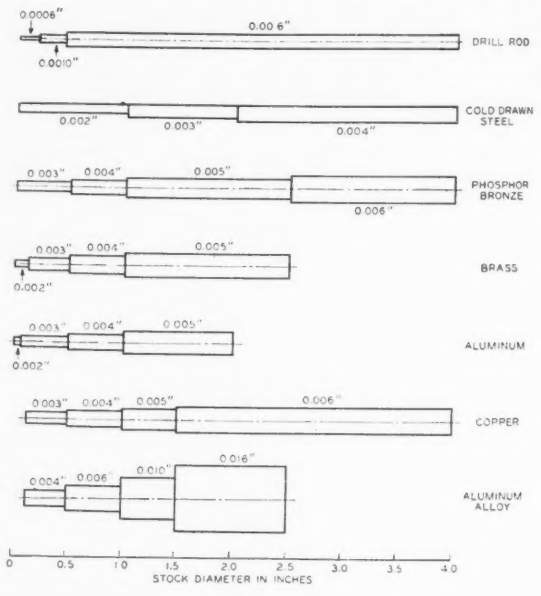


FIGURE 1

Total diameter tolerances of commercial round stock

[3]Since this article was first published, the American Standard for Preferred Thicknesses for Uncoated Thin Flat Metal (under 0.250 inch) (B32.1-1941) has been given final approval by the American Standards Association and published. Copies are available from the ASA at 25 cents.

larger the tolerance allowed the cheaper the part is to manufacture and, therefore, the tolerance specified should be the widest that will permit functioning. However, this is generally true only of overall tolerances which define the manufacturing methods that may be used. It is true in the sense that apparatus is inexpensive to manufacture if it can be so designed that its functioning is largely independent of variations in dimensions. However, such design is not usually achieved and in much apparatus fairly good overall accuracy of dimensions and fit is necessary for uniform functioning. The problem of setting tolerances then becomes one of distributing certain tolerances over various dimensions and different parts. This is a very difficult problem and in the case of any individual tolerance a larger value does not necessarily mean lower apparatus cost and may even mean the reverse.

This is easily demonstrated in the case of part tolerances on dimensions which correspond to the dimensions of raw materials. Figure 1 shows the tolerances of commercial grades of round stock. If, for example, engineering requirements dictate the use of a particular material there is no gain in specifying larger tolerances than those to which it is regularly furnished and doing so may require greater accuracy in the mating part. There may even be economy in the use of higher priced material produced to closer tolerances, as for example, drill rod instead of cold drawn steel through economy in the manufacture of associated parts. Similarly manufacture of cantilever springs from sheet stock produced to closer tolerances may reduce the cost of subsequent adjustments. Therefore, when individual part tolerances are involved consideration must always be given to the size tolerances of raw materials.

The same situation exists in the case of tolerances on dimensions produced by a manufacturer's own tools. While close overall limits will require greater overall accuracy of the tools provided and greater frequency of set-ups the most economical distribution of tolerances will be that based upon the normal tolerances that can be expected from various manufacturing operations. Certain degrees of accuracy are inherent in certain types of machines and tools and allowing variations not in

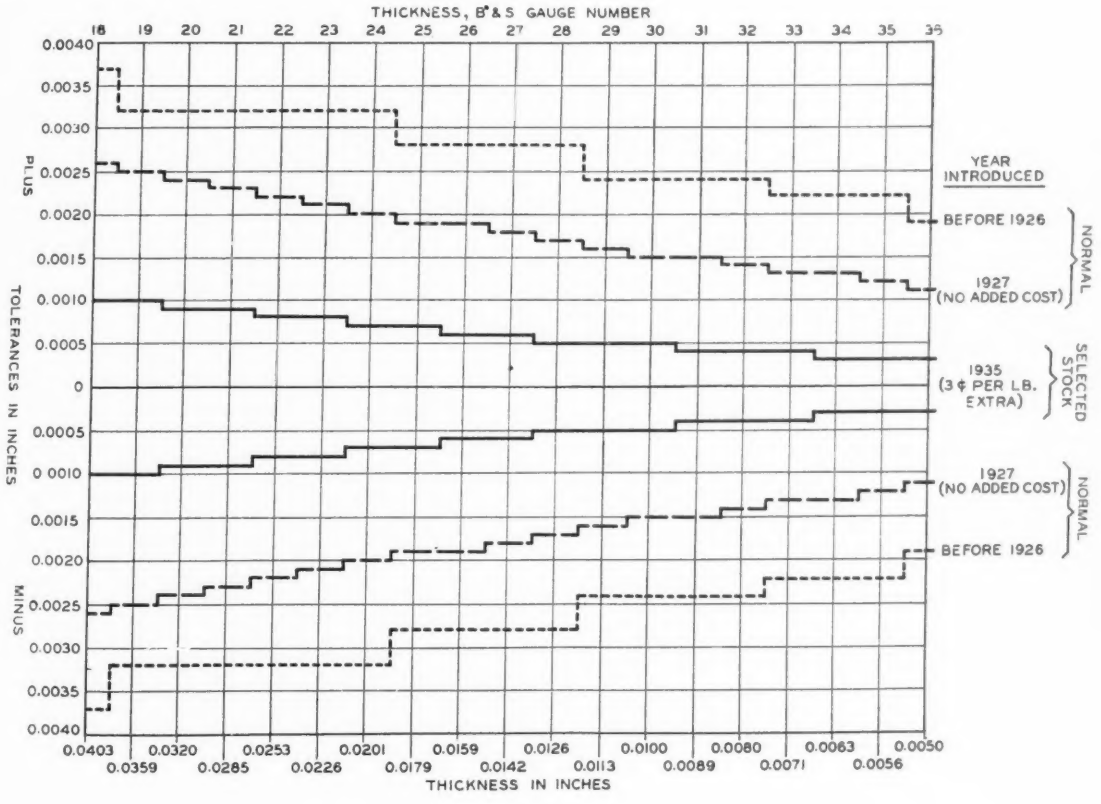


FIGURE 2

Improvement in thickness tolerances for brass sheet 1926-1939

proportion to these values serves little if any purpose. Also there are types of combination tools and automatic machines, familiar in mass production practice, with which wide tolerances are not an economy because accuracy is required for locating or nesting the part for subsequent operations. Since the distribution of tolerances involves such complex factors of manufacturing method and cost as these, it is desirable for the designing engineer to determine and to indicate unmistakably the effect of tolerances upon function and, where interchangeability of individual parts in service is not involved, to allow manufacturing considerations to determine the distribution of tolerances in an assembly.

It is apparent that considerable study of the requirements for functioning of the design, of available materials and the limitations of manufacturing process are required to establish the most economic balance between performance of the apparatus and the required tolerances. Consideration should be given to these tolerance factors in cooperation with manufacturing engineers in an early stage of a design problem so that they may influence the trend of design. This step may avoid the necessity for slow and costly manufacturing developments and delays in starting production. However, completely rigid adherence to the status quo of tolerances is not necessary in long range planning of major design projects. In such cases the trend of progress in materials and manufacture should be determined and anticipated. For example, some cantilever spring design requiring narrow control has been based on sheet material produced to tolerances not commercially available at the time but made so by the time it was needed for production. The extent of progress in this direction is shown by Figure 2.

Similar progress in manufacturing technique can also be expected. For example, the development of broaching from a comparatively crude operation to the precision method it is today is recent and outstanding.

Cumulative Assembly Tolerances

Another problem in choice of tolerances is in those cases where a considerable number of parts are additively assembled into a unit as in the case of "spring pileups" used on electrical contacting apparatus such as relays and switches. These consist of considerable numbers of sheet metal springs and insulators alternating and clamped by screws. If the overall tolerance on such an assembly must be taken as the sum of the tolerances of the individual parts various courses of action are presented, the extremes of which are:

1. Very small tolerances must be maintained on the individual parts or
2. Adequate space must be provided in the apparatus for extremely large variations in the assembly.

Small tolerances on the individual parts may be extremely expensive and large space allowances and provisions in associated parts for variations in the assembly may be a serious design handicap.

However, it is recognized that there is obviously small probability that all minimum or all maximum parts will appear in any one assembly. It has been found satisfactory in certain types of such pileups to assume that the maximum dimensional variation that will actually be encountered in an assembly will not be greater than 70 per cent of the sum of the part tolerances. A similar

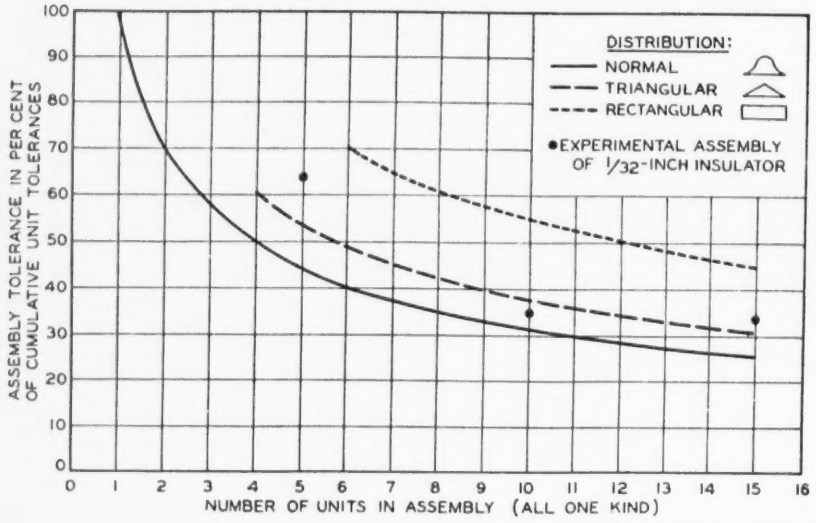


FIGURE 3

Statistical relationship of overall tolerance on an assembly and the sum of the individual part tolerances

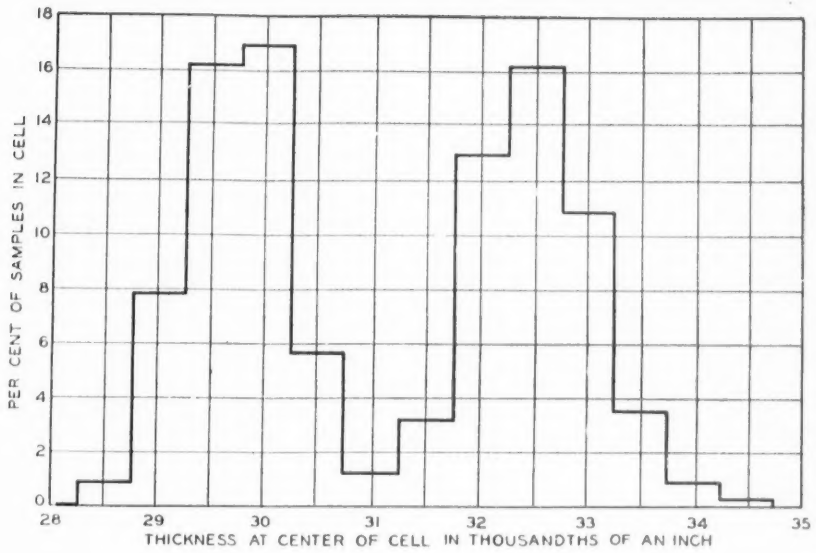


FIGURE 4

Distribution of thickness in 2083 pileup insulators

situation exists in many kinds of assemblies or associations of tolerances.

The statistical relationships involved in this problem are indicated by Figure 3. The curves show the percentage of the cumulative part tolerances within which 99.7 per cent of the assemblies may be expected to be found with different numbers of similar units in the assembly. The solid line is deduced from theoretical relationships. It assumes that the parts are all of one kind, that the parts going to assembly are controlled, of normal distribution and the limits are rationally set to represent the actual conditions. The dotted curves have been deduced from relationships which have been proposed as representing rectangular and triangular distributions of individual part tolerances. The curves may not be truly representative of specific cases because of inconsistent selection of limits or erratic distributions. However, they indicate that the 70 per cent rule on pileups is probably on the safe side in most cases and that closer design of assembly or less restrictive tolerances and cheaper manufacture of piece-parts might be readily possible either (1) by better control, (2) by actual mixing of lots of piece-parts, or (3) even merely by knowledge of the actual statistical distribution of part dimensions.

The three points indicated in Figure 3 show the results of a limited experiment in which pileups were assembled from 2083 individual insulators of 1/32 in. phenol fiber taken from factory stock. The establishment of curves by this type of experiment using a sufficiently large and representative sample would be practicable and would permit considerable condensation of design on a sound basis. In this particular case the parts used apparently came from only two different sheets of fiber as indicated by the distribution of thickness of the individual parts shown by Figure 4.

Further statistical analysis of this type of situation is needed together with experimental determination of the distribution of dimensions actually encountered in specific cases.

The distribution of dimensions in a product arises from a variety of causes. One type of cause is the variations such as those in the dimensions and physical properties of raw material which may produce different product dimensions even from a particular tool. A different and more systematic type of cause is the change in the dimensions of tools as the result of wear. The practice followed in establishing tool wear allowances will therefore affect the limits and statistical distribution of part dimensions during the life of the tool. Some designers and some tool makers consider that the specification of a nominal value with plus and minus variations requires a different handling of initial tool dimensions and wear allowances than does the specification only of minimum and maximum limits for a part dimension. Equally good authority maintains that a manufacturer recognizes no difference. Establishment of standard practices in such matters is a needed step in determining the distribution of dimensions to be expected in machined parts. In the present absence of standards or of any consistent attitude on the subject it is necessary for designing and manufacturing engineers to reach an agreement in specific cases where this factor is important.

Such are the factors which determine the tolerances which can be obtained economically or

which perhaps will be unavoidably encountered. It is necessary for a designer to keep informed of the interaction of these factors as his design crystallizes and he must also determine the effect of such tolerances upon functioning in order to complete a design which will function properly when assembled in quantity production.

(A discussion of Functional Dimensioning, originally included as part of Mr. Werring's general article on Engineering Problems in Dimensions and Tolerances, will be published in an early issue of INDUSTRIAL STANDARDIZATION.)

Color Symposium Stresses Need For Adequate Specifications

The importance of adequate specifications for color as well as the use of color in the testing and evaluation of materials are stressed in a symposium, sponsored jointly by the Inter-Society Color Council and the American Society for Testing Materials, and published recently by the ASTM.

An Introduction to Color by Deane B. Judd, which starts off the symposium, discusses the attributes of colors, and the distinction between the psychological definition of color and the technical definition. A paper on Color Specifications of Transparent Materials by Francis Scofield reviews critically the various sets of standards. R. H. Sawyer in his paper on Hiding Power and Opacity, discusses the most significant theoretical and empirical relations which have been developed and those practical testing methods which have attained widest recognition. Color Standards for Opaque Materials is the subject of a paper by I. H. Godlove. Mr. Godlove points out that material standards may vary from haphazard and variable traditional objects which lead to unprecise color names to groups of standards such as the Ostwald and Munsell systems. The practical problems of color testing are covered in two papers, one by A. E. Parker on Spectrophotometry and Color Evaluation, and the other by R. S. Hunter on Photoelectric Tristimulus Colorimetry.

Copies of the 86-page Symposium on Color can be obtained from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, at $1.00 in heavy paper cover; $1.25 in cloth binding.

Research Project to Give Data For School Furniture Standards

Start of the school year again brings into prominence the standards, or lack of standards, used in selecting equipment for our educational institutions. Although school furniture is now usually purchased without the aid of specifications, the National Bureau of Standards announces that a new project undertaken at the Bureau recently may bring about a change in this practice. The project, which was established under a grant from the General Education Board, is intended to develop functional specifications based upon research which will assure local purchasing agents that the furniture purchased will meet school needs. The functional specifications being prepared, in addition to defining the function of the furniture, will specify dimensions of capacity, space used, seating posture, and performance tests.

H. B. Johnson, research associate, is preparing the specifications, under the direction of the Interstate School Building Service and the American Council on Education.

Rosenwald to Speak Dec. 10 at ASA Annual Meeting

The Annual Luncheon Meeting of the American Standards Association will be held December 10, at the Hotel Astor, New York.

Lessing J. Rosenwald, Chief, OPM Bureau of Industrial Conservation, and R. E. Zimmerman, Vice-President, United States Steel Corporation, President of the American Standards Association, will be the speakers.

Luncheon is at one o'clock—preceded by a meeting of the Standards Council in the morning and followed by a meeting of the Board of Directors in the afternoon.

Those wishing to make reservations for the luncheon can do so by writing at once to the American Standards Association at 29 West 39th Street, New York.

Ceriale Accepts ASA Invitation To Visit United States in 1942

Head of Argentine standards association will visit North American industrial centers

MARCELINO A. CERIALE, director of the national standardizing body of Argentina, has just accepted an invitation to visit the United States as a guest of the American Standards Association. The visit is to take place in February or March.

Purpose of the trip is to further cement the friendly relations between the United States and Argentina by giving Mr. Ceriale an opportunity to study at first hand the development of American industrial practices and standards.

After some days or weeks with the Washington officials in charge of the United States Government standardization work, arrangements will be made for Mr. Ceriale to visit the major manufacturing centers of the country, such as Philadelphia, Detroit, Chicago, Schenectady, etc.

Standards Important in Industrial Relations

"Present conditions—the world situation and the awakening to the importance of standards in South America—offer a rare opportunity to interweave the standardization work of this country and Latin America," said P. G. Agnew, secretary of the American Standards Association, in announcing Mr. Ceriale's visit. "This is of basic importance since standards provide definitions of products and are thus an important factor in industrial and commercial relations."

"Cooperation in standardization work offers an effective means of facilitating the flow of goods between the United States and Latin-America by bringing the standards for commodities into closer accord and by making them mutually better understood," he explained. "Standards for purchasing, shipping, and operating routines make possible administration of far-flung business enterprises. A number of standards which affect bills-of-lading and other routine matters in connection with customs inspection have even been the subject of treaties between the Americas.

"Up to the present this country has made only scant and sporadic use of standards in developing its foreign trade—far less than has been made by Great Britain and especially by Germany."

Interest in the use of standards in buying and selling is on the rapid increase in Latin-American countries. Full-fledged national standardizing bodies are now in operation in Argentina and Brazil; and a certain amount of standardization work is being carried on by engineering societies or government departments of some of the other countries. In the last few years the Inter-American Safety Council has come into being, which means that the United States and several of the Latin-American countries are cooperating in accident prevention work. Already arrangements have been made for the translation of a number of American Standard Safety Codes into Spanish.

Steps have been taken to set up a South American Committee for Technical Standards, with the purpose of stimulating the organization of strong national standardizing bodies in the South-American countries and ultimately of having an influence on international trade. This Committee held its first meeting last month at Rio de Janeiro. The American Standards Asociation is now organizing a committee representing key groups in Latin-American trade to work out a long-term program of closer cooperation with Latin-American countries in engineering and standardization activities.

South Africa Reports On Standards Activities

Six industry sectional committees and one subcommittee reported progress on their standardization work to the South African Standards Institution in its Sixth Annual Report covering the period from June 1, 1940 through May 31, 1941. The general industry committees working under the procedure of the South African Standards Institution represent mechanical, electrical, and civil engineering, architecture and building, and fuel, chemical, and agricultural fields.

Reports of the committees showed that comments had been sent from South Africa on British, Australian, and New Zealand draft standards, and that some of these as well as new standards had been adopted for use in South Africa.

American Defense Standard Sets Safe Concentration of Cadmium

THE first emergency standard for the safe permissible concentration of a toxic dust or gas in work places was completed this month by the American Standards Association with approval of the American Defense Emergency Standard for the Allowable Concentration of Cadmium.

The increasing importance of toxic materials such as cadmium in connection with the defense program, and greater hazards to workers due to increased production, has prompted the American Standards Association to place several toxic materials needed in defense work on the list of emergency projects to receive special and speedy attention. Such materials, on which work is now going forward, are acetone, ether, manganese, and xylol. Antimony, arsenic, and zinc are being considered as substances for which emergency standards should be developed.

Cadmium is used as a substitute for tin in antifriction metals and solders and in bearing metal. It is widely used in cadmium plating of wire, tools, and other iron and steel articles. It is toxic when absorbed either through the lungs or the gastro-intestinal tract and in some cases causes generalized pneumonia. Some of the occupations in which workers are exposed to cadmium hazards include cadmium-alloy making, cadmium plating, color making, electroplating, lead smelting, paint making, soldering, storage-battery making, textile printing, welding, and zinc smelting and refining.

The new American Defense Emergency Standard describes the properties of cadmium, states the permissible concentration as 1 milligram of cadmium per 10 cubic meters of air, and outlines the sampling procedure and analytical methods to be followed in determining the concentration.

The standard is now being printed and copies will be available from the ASA soon.

Metal Lath Manufacturers Are New ASA Associate Members

The Metal Lath Manufacturers Association has rejoined the American Standards Association as an Associate Member, and will receive the benefit of ASA services available to that membership group. These services include copies of INDUSTRIAL STANDARDIZATION, free copies of new standards approved by the ASA, and limited information service from the ASA Library. Associate Members are also entitled to send observers to meetings of ASA Standards Council but have no voice in the Council's decisions. The Association was formerly an Associate Member of ASA from 1936 to 1940.

Arthur J. Tuscany is Commissioner of the Association, with headquarters in Chicago.

Specifications for Large Scales Are Brought Up-to-Date

Specifications to aid in the selection of motor truck, built-in, and self-contained scales for use wherever heavy duty or severe service conditions are expected have been brought up-to-date by the National Bureau of Standards and are now available in Letter Circular LC 663. The specifications were adopted by the American Railway Engineering Association and have the endorsement and approval of the Association of American Railroads for scales in railway service. They were adopted in 1940, but changes in several paragraphs were made in the 1941 edition.

The specifications are issued by the Bureau "to the end that the design and performance characteristics of such equipment in service may continue to be improved."

ASA Discontinues Project on Safety for Amusement Parks

The Standards Council of the American Standards Association has voted to discontinue the ASA project on a Safety Code for Amusement Parks (Z13). The action was taken on recommendation of the Safety Code Correlating Committee, because of the years of inactivity since the project was undertaken and the unlikelihood of progress in view of the disinterest of the National Association of Amusement Parks, Beaches, and Pools.

The Safety Code Correlating Committee recommended that copies of tentative drafts which have been developed by the sectional committee be transmitted to the National Safety Council for possible use in a Safe Practices Pamphlet, and to the National Park Serivce.

Standardization and Its Effect On Latin American Trade

by Cyrus Townsend Brady, Jr.

Agent, United States Steel Export Company, Buenos Aires, Argentina

The war has been responsible for industrial expansion in Latin America and as a result standardization is becoming of increasing importance there, Mr. Brady told a meeting of the Foreign Trade Council in New York, October 7. In his paper, which is abstracted here, Mr. Brady urges cooperation between industrial leaders of North and South America to bring about a closer understanding on technical standards. He tells why this cooperation is of vital importance to both groups.

AT first sight it may seem an unnecessary distraction to be urged to concern ourselves with the standardization movement while we are faced with all the difficulties of war-time trading. Because of the scarcities brought about by war-time conditions, customers are clamoring for us to send them whatever we can get for them. They will accept gladly almost anything we do send them, provided it measures up to some sort of acceptable standard. The war itself, however, (and when I say "war", I include the first part which ended in 1918) has been and still is one of the principal forces for standardization.

The effect of the war on the industrial development of Latin America is two-fold. First, when men cannot get the goods, the services, or whatever they are accustomed to receiving, from abroad, they apply their ingenuity to doing what they can with what they have at hand. In the armistice period between 1918 and 1939, there was a great migration of industry to the southern hemisphere. Many companies who formerly supplied commodities for the South American trade now manufacture in those countries, using local materials. Able men in Latin America who in the past have been attracted by the so-called learned professions now find that they have ample scope for their talents in industry. There is, therefore, naturally a great impetus to local manufacture.

Second, the war promotes industrialization by confirming the feeling of the governmental classes in the Latin American nations that they must have within their own borders the means of maintaining their national economies when the foreign sources of supply are cut off.

Industrialization Needs Standards

This increasing industrialization brings as a direct consequence the need for standardization. When industries are founded, as they have been in Latin America, by men of many different countries, the resulting variety in the materials, the methods, the nomenclature, the classification, the types, the grades, and so on, becomes not only confusing but a definite detriment to the advancing industrialization. Every industry must depend in some measure on other industries. All industry is more or less united. Hence the complications and confusions gradually lead to a demand for relief. Standardization becomes a necessity.

If necessity then is the mother of standardization, the cradle of the organized movement toward standardization in Latin America is Argentina, a land of cosmopolitan enterprise, where there is fierce and frequently bitter commercial rivalry associated with other international endeavors. There industrialization has already proceeded to a remarkable degree. Actually, Argentina is now exporting certain manufactured products, as well as the products of its fields.

To carry the metaphor further, the father of standardization in Latin America is Engineer Marcelino A. Ceriale, founder of the Argentine Standards Institute. When he commenced work five or six years ago, everybody recognized that standardization was necessary, but many held aloof from it. There were even some, I regret to say,

who tried to oppose it. But through his energy and his professional skill, as well as his tact and integrity of character, Mr. Ceriale overcame the difficulties, until now the Argentine Standards Institute is a model for South America. The standardization body which has been organized in Brazil, for example, is in close touch with and was inspired by the Argentine Institute. There are also similar movements or similar organizations starting all over South America. I believe this very month a congress is being held[1] to consider whether a South American standardization body can be organized. The movement is spreading, and will sooner or later pervade every Latin American country.

This movement in Latin America affects every person who is engaged in foreign trade there. Plans are going forward to standardize almost everything. The Argentine Institute is considering standardizing fire extinguishers. It is already standardizing drawing papers, a scheme of projection to be used in mechanical drawing, the factor for converting inches to millimeters, and tests and specifications for materials such as paints, varnishes, cement, drugs, lumber, dry goods, textiles of every sort, steel, electrical appliances, and other materials.

In Latin America every activity ultimately gets around to the State. These standards, therefore, are going to be imposed practically with the force of law. If a manufacturer is quoting on some service or goods or equipment, he will find that he must meet these standards. If, for example, he gives away a fire extinguisher with his product and it does not meet the standard set-up, his bid will be thrown out. That is quite in line with the general tendency of the State in Latin America to assume the lead and direction in all such matters.

When sensible men are confronted with a movement which is certain to affect their interests, they wish to ally themselves or to be in touch with it for two reasons. First is the elementary negative reason of vigilance and of taking measures to prevent any action which might affect them unfairly. The second and positive reason, however, is to take advantage of an opportunity to do something for public welfare and also for the particular benefit of everybody concerned.

For both these reasons, and particularly for the second, I urge you industrial leaders of the United States to bring the leaders of the standardizing bodies in Latin America into contact with their confreres in this country, and to put at their disposal anything from our wealth of experience which they would like to have.

I urge you, also, to have your agents, your representatives, your technical men in South America, become members of these standardizing bodies; have them take some part in the preparation of the standards, serving on committees if opportunity presents itself, and aiding in securing any kind of material that they can use.

In other words, encourage your men to do what they can to help themselves, to help you, to help the continent as a whole, and even, I might say, to help the whole world through cooperation on standardization.

Westman Is Named Chairman Of Board of Examination

Several changes in personnel of the ASA Board of Examination, the committee which is responsible to the Standards Council for all miscellaneous standardization projects not included under the jurisdiction of the ASA correlating committees, have just been announced.

Harold P. Westman, secretary of the Institute of Radio Engineers and an alternate on the Standards Council representing the Institute, has been named chairman of the board to succeed Walter C. Wagner. Mr. Wagner, representing the Electric Light and Power Group on the Standards Council, has been chairman of the Board of Examination during the last few years. He has now been called into active duty with the U. S. Navy.

Mr. Westman has been a member of the Board of Examination since February, 1939.

L. F. Adams, representing the National Electrical Manufacturers' Association on the Standards Council, has been appointed by the chairman of the Council as a new member of the Board of Examination.

The other members of the Board of Examination and the organizations they represent on the Standards Council are: Colonel John K. Clement, War Department (*Standards Council alternate*); R. B. Shepard, ASA Fire Protection Group (*Standards Council alternate*); T. E. Veltfort, Copper and Brass Research Association.

[1] This meeting was held in October.

Falk Represents War Department On ASA Standards Council

The War Department has named Lieutenant Colonel Byron A. Falk, Signal Corps, as its representative on the Standards Council of the American Standards Association. Colonel Falk replaces Lieutenant Colonel Ray M. Hare to complete his unexpired term ending December 31, 1941.

Scientific Measurements Are Needed As Basis for Standard Shoe Sizing

Bureau of Home Economics' study shows widespread confusion in sizing shoes and lack of scientific knowledge of foot dimensions

SCIENTIFIC research on new methods of foot measurement, together with measurement of large numbers of feet and analysis of the data obtained, are needed as the basis for a uniform system of sizing shoes, Mrs. Carol Willis Moffet declares in a report on shoe sizing and fitting just completed for the U. S. Bureau of Home Economics. The investigation that led to Mrs. Moffet's report resulted from recommendations made by a Study Subcommittee of the ASA Advisory Committee on Ultimate Consumer Goods which has been looking into the possibility of developing national standards for shoe sizes. Mrs. Moffett's report has been published as Miscellaneous Publication No. 469 of the U. S. Department of Agriculture.

Any clothing industry which serves a mass market, as does the shoe industry, needs nationally accepted sizing and fitting standards, based on exact knowledge of body dimensions and conformation and the frequency with which they are found in the population, Mrs. Moffett concludes from her study. Successful development of national standards for sizing and fitting shoes on the basis of these data depends upon the cooperative efforts of all parties concerned, working together through the procedures of a national standards agency, she declares.

Mass Production Only 50 Years Old

Mrs. Moffett found that mass production of shoes has only been in effect for some 50 years. As late as 1856 women were advised how to make their own shoes in a book published under the title *Every Lady Her Own Shoemaker; or, a Complete Self-Instructor in the Art of Making Gaiters and Shoes.* The Civil War gave the impetus to mass production of shoes, particularly since it was in 1861 that Gordon McKay introduced the system of leasing to manufacturers on a royalty basis a machine which he had perfected for stitching soles to uppers. Manufacturers accepted the machine to increase production of shoes for soldiers.

"The lasts in use before machine manufacture were crude affairs," Mrs. Moffett explains, "which the shoemaker padded with pieces of leather to approximate the measurements he took on his individual customer's feet. When last making became a separate industry, measurements were specified by the manufacturer. These last measurements were derived from those of the custom shoemakers, and each manufacturer considered his own set of measurements his trade secret."

There was so much confusion due to lack of uniformity in sizing shoes that when the first national trade association was organized in 1886, its first act was to insist that uniform national standards be adopted for sizing. The standards adopted included only one set of uniform measurements, and manufacturers who deviated from them were urged to stamp the actual measurements used on the shoes. There is now, however, so much unpredictable variation from these standards that Mrs. Moffet declares, "conditions in sizing and fitting again approach the confusion that

Shoe buying is no easy matter, customers find, because shoe sizes have no exact meaning today. Mrs. Moffett's study shows that a large number of scientific foot measurements should be made and analyzed before standard sizes are agreed upon.

existed before 1886." This confusion is a result of the fact that there is widespread disagreement on the dimensions for a given size. Evidence of the difficulty of obtaining satisfactory fit was found by one last manufacturer who selected a girl with a 6½ A foot and sent her around to a number of retail stores in different cities to check up on fitting practices. She returned with shoes in a wide range of sizes, but few that he considered a good fit. In another case a shoe manufacturer had a woman buy 12 pairs of shoes at different stores in one city. She was satisfied with the fit of all of them, although there were eight different sizes among the 12 pairs she bought. Four pairs were judged by the manufacturer to fit her well, and among these were three different sizes.

Mrs. Moffett found from her study that a research project similar to the one carried out by the U. S. Bureau of Home Economics in which 147,000 children were measured as a basis for standard clothing sizes should be undertaken to find out what foot measurements actually are and how they vary in dimensions. Mrs. Moffett points out that when measurements are taken in any great number the majority of the measurements fall into patterns characteristic for large groups. "Human bodies cannot be standardized but their characteristics can be known and classified as to the frequency with which they occur," she explains. This kind of information is necessary in mass production to provide garments that fit large numbers of persons. In mass production, methods and practices must be standardized in order to produce thousands of like articles most quickly and economically. "Uniform standards for sizing and fitting garments on the basis of known body dimensions and conformation is one of the most important needs of all clothing industries," Mrs. Moffett concludes.

Mrs. Moffett's study gives in detail the history of fitting footwear, describes how manufacturers arrive at size and fit, how shoe manufacturers influence fit, and how retailers interpret fit. It describes new methods of foot measurement, analyzes the money involved in shoes, and outlines the advantages to be obtained from uniform national standards.

Electric Light Group Names Representatives on Standards Council

The ASA Electric Light and Power Group has appointed W. F. Sims of the Commonwealth Edison Company as its representative on the Standards Council of the American Standards Association, to complete the unexpired term of F. V. Magalhaes, ending December 31, 1941.

H. E. Kent will serve as alternate representative succeeding J. O. R. Coleman, who resigned recently.

As members of the Standards Council, Mr. Sims and Mr. Kent will have a voice in all action taken by the ASA on initiation of new standardization projects, approval of personnel of ASA committees, and approval of new standards under the procedure of the American Standards Association.

Conference Will Consider Standards for Furnaces

A general conference has been called by the National Bureau of Standards for 10:00 a.m., EST, December 4, to consider a proposed Commercial Standard for gravity type gas floor furnaces (natural draft).

Copies of the proposed standard may be obtained from the National Bureau of Standards, Washington, D. C.

1940 Industrial Accidents Kill or Injure Nearly Two Million

The toll of 1940 industrial accidents amounted to nearly 1,890,000 workers killed or injured at their jobs in United States, according to estimates of the U. S. Bureau of Labor Statistics. If the economic time loss caused by deaths and permanent disabilities is excluded, the Bureau estimates, the employee-days lost in actual absence from work would be 41,912,000—enough to have provided 140,000 workers with full-time employment during the entire year. If standard time charges are applied for deaths and permanent impairments, the total time loss is increased to the tremendous total of 233,840,000 days, equivalent to full-time annual employment for about 780,000 workers—about 95 per cent of the increase in employment during 1940.

An analysis of the types of injuries, and the industries in which they occurred, is given in *Industrial Injuries in the United States During 1940* by Max D. Kossoris and Swen Kjaer, U. S. Bureau of Labor Statistics, reprinted from the *Monthly Labor Review*, August, 1941.

ASA Approves New Standards For Petroleum Products

Four new standards and three revised standards are in list recommended by ASTM for approval by ASA

FOUR new standards for petroleum products, including a test for distillation of plant spray oils, two methods concerned with determining viscosity, and a method of test for vapor pressure, have just been approved by the American Standards Association, together with three revised standards.

The standards were submitted by the American Society for Testing Materials as sponsor for the ASA Sectional Committee on Petroleum Products and Lubricants (Z11), which cooperates closely with ASTM Committee D-2.

The Method of Test for Distillation of Plant Spray Oils (Z11.43-1941; ASTM D447-41), which was published as tentative by the ASTM in 1937 and revised in 1939, 1940, and 1941, includes sections on apparatus, preparation of apparatus, procedure, reproducibility of results, and barometric pressure correction. With proper care, the standard provides, duplicate determinations made according to this test by the same operator should agree within plus or minus one per cent of condensate on the basis of the original sample at specified temperatures above 600 F (315 C). Determinations by different operators should agree within plus or minus 1.5 per cent.

Tables for Calculating Viscosity Index

The American Standard Method for Calculating Viscosity Index (Z11.45-1941; ASTM D567-41) includes the same technical content as the American Petroleum Institute standard API 540-41. The tables and equations provide a means for calculating the viscosity index of a petroleum product or lubricant from its viscosity at 100 and 210 F. The viscosity index is defined in the standard as an empirical number indicating the effect of change of temperature on the viscosity of an oil. A low viscosity index signifies a relatively large change of viscosity with change in temperature. Formulas and tables included in the standard show how the viscosity index is calculated. Tables 1 and 2 give the values which represent the viscosity of the oil at 210 F for use in calculating the index according to the formula outlined. The reproducibility of the results obtained according to this method depends upon the accuracy in determining viscosities at 100 F and 210 F, the standard explains.

This method for calculating viscosity index, and the standard Method of Conversion of Kinematic Viscosity to Saybolt Universal Viscosity (Z11.46-1941; ASTM D446-39), also just approved by the ASA, bring all the ASTM standards on viscosity of petroleum products into the list of approved American Standards. They include, in addition to the two just approved, the Standard Method of Test for Viscosity by Means of the Saybolt Viscosimeter (Z11.2-1938; API 518-38; ASTM D 88-38) and the American Standard Viscosity Temperature Charts for Liquid Petroleum Products (Z11.39-1938; API 533-39; ASTM D 341-39). A fifth method for viscosity determination is still in the tentative stage. This is the Tentative Method of Test for Kinematic Viscosity (ASTM D 445-39 T).

The fourth new standard approved by the ASA is the Method of Test for Vapor Pressure of Petroleum Products (Reid Method) (Z11.44-1941; API 539-41; ASTM D 323-41). This method of test is intended for the determination of the vapor pressure of volatile, nonviscous petroleum products. Before its adoption as standard, it was published as tentative from 1930 to 1941. The apparatus to be used in the test is described in detail, the sampling methods are outlined, and principles for calculating the "Reid vapor pressure" of the sample under test are given. In addition, sampling procedure for products having vapor pressures over 26 lb is described. With care and strict attention to detail, duplicate tests for vapor pressure should not differ from each other by more than 0.1 lb plus 1.0 per cent of the vapor pressure as determined, the standard provides.

The revised standards, just approved by the American Standards Association on recommendation of the ASTM, are:

Carbon Residue of Petroleum Products, Method of Test American Standard (Z11.25-1941; ASTM D 189-41)

Distillation of Gas Oil and Similar Distillate Fuel Oils, Method of Test American Standard (Z11.26-1941; ASTM D 158-41)

Distillation of Crude Petroleum, Method of Test American Standard (Z11.32-1941; ASTM D 285-41)

Copies of all these standards may be ordered

from the American Standards Association at 25 cents each. The 1941 Report of ASTM Committee D-2 on Petroleum Products and Lubricants and Methods Relating to Petroleum Products also includes all these standards, as well as other ASTM standard tests and specifications for petroleum products. This book, which is a compilation of all standards developed by ASTM Committee D-2 and includes a summary of the committee's activities, is available from the American Society for Testing Materials, 260 South Broad Street, Philadelphia, at $2.00 per copy.

War Department Coordinates Gasoline Specifications

Standardization of gasoline and lubricants is the purpose of a committee set up recently by the War Department to coordinate all War Department standards and specifications for petroleum products with the exception of gasoline and lubricants for aircraft. Activities of the committee include simplification, standardization, and promulgation of petroleum product specifications, and all procuring agencies of the War Department are required to coordinate their work on petroleum products through the committee.

Up to the present time the committee has agreed upon standards for the following:

One all-purpose gasoline as covered by U. S. Army Specification No. 2-103

One all-purpose diesel fuel as covered by U. S. Army Specification No. 2-102b

Four grades of gasoline engine lubricating oil, SAE 10, 30, 50, and 60, as covered by U. S. Navy Specifications for lubricating oils

Two grades of diesel engine lubricating oil as covered by U. S. Army Specification No. 2-104

Members of the committee are:

Office of the Under Secretary of War
Brig. General Walter B. Pyron
Lieut J. H. Fitch

Ordnance Department
Captain G. H. Schoenbaum
Lieut R. E. Jeffrey

Quartermaster Corps
Lieut F. E. Neef
Lieut C. D. Becker

Corps of Engineers
Lieut-Col C. H. Chorpening
R. F. Harvey

Chemical Warfare Service
Lieut-Col M. B. Chittick

NC-RC Shows Progress In Labeling Program

The National Consumer-Retailer Council at its annual meeting September 25 elected several new members of the Board of Directors, and reported progress in its work, particularly in its program to promote informative labeling. Mrs. Patrick Henry Adams, representing the General Federation of Women's Clubs, was elected to the Board for a one-year term; Dr. David R. Craig, president of the American Retail Federation, for a two-year term. Leon Bodenheimer of the May Department Stores, representing the National Retail Dry Goods Association; Miss Ruth O'Brien, representing the American Home Economics Association; and Lansing P. Shield, vice-president, Grand Union Company, representing the National Association of Food Chains, were elected for a three-year term.

Some 250 labels in the food and textile fields now bear the Council legend: "This is the type of label suggested by the National Consumer-Retailer Council, Inc.," the report for the year showed.

A vote of appreciation was given Harold W. Brightman, chairman of the Council since its organization, for "his vital leadership which has carried forward the ordered consideration of the problems common to retailers and consumers and set on foot cooperative action in a field vitally important to the economic welfare of the nation in the years to come."

West Virginia Will Use Old Law For Standard Weights and Measures

Consumer protests against the rising cost of living have in at least one state brought to light unenforced statutes providing for testing and approval of weights and measures and for the protection of consumers against short weight and variable quality of food.

Responding to complaints from consumer organizations, trade unions, and farm groups, Governor Neeley of West Virginia this summer drafted Dr. Julius Cohen, professor of government at the University of West Virginia, to help formulate a consumer-protective legislative program. In the course of his work, Dr. Cohen found a long-forgotten law, never invoked, revealing that the State Commissioner of Agriculture had authority to regulate and supervise the operation of public food markets. The law required him to take action to insure that consumers got food products of uniform grade and quality at fair prices.

Another old statute, never previously enforced, gave the Governor the needed authority to appoint a staff of weights and measures inspectors.

Glass Container Standards Help Meet Increased Demand

Mass production methods in food packing require uniform container sizes to keep costs down

A SHARP rise in the demand for glass containers for food as well as other products is focusing attention on the standardization program which has been under way for some time in the glass container industry. The new demand, which affects milk, beer, and liquor bottles and medicinal and toilet ware, also reflects new conditions in the food industries, where packers are hedging against a possible lack of other types of containers. The new requirements have brought production of glass bottles and jars to a total of over 6,000,000 gross per month for the past four months. The increase is notable despite the fact that the use of glass for food packing has been growing steadily during the last few years, the industry reports.

Standardization for the glass container industry is carried out by the Design and Specification Committee of the Glass Container Association, which has had a standardization program for some years. Basic specifications, such as the height, cross-section, and total weight of glass of a bottle or jar are included in the GCA standards, but elements of styling are left to the individual companies.

Mass Production in Food Packing

Uniform standardized glass containers are needed for economical operation under the mass production methods now used by food packers, since food-packing equipment has advanced to the point where straight line production is usual. The container standardization program is in effect a stock program carried to an industry-wide scale for bottles supplied by more than one manufacturer to a number of customers. Although the glass containers standardized by the Association are a small proportion of the total number of stock bottles and jars available, they represent a volume of production out of all proportion to the number of designs.

Mass production and standardization of glass jars and bottles has helped to reduce the unit cost of glass containers, although it has meant a vast increase in the cost of a single new bottle because of the large investment in glass tanks and machinery. A set of machine molds today may cost around $750 compared to $20 or $30 for hand-blown molds.

A glass company, of course, does not invest in a stock mold until it is sure that the bottle made from it will have wide usage and a market which can be expected to continue for a reasonable period.

Among the glass containers for which standard specifications are available are milk, cream, and cottage cheese jars, certain medicinal and toilet ware, beer bottles, liquor ware, a line of narrow neck bottles, and a line of wide mouth bottles. In the narrow-neck classification are catsup bottles, bottles for fruit juices, syrup and vinegar.

Recently the standards for glass bottles for food have been increased by the addition of a two-pound preserve jar, specified last spring for Army use. An outstanding new stock container offered by the industry is a No. 2½ jar, with the same capacity as the No. 2½ can. This is the capacity recently adopted by the California Packing Co. for a line of fruits and vegetables marketed under the Del Monte label.

Wherever practical, when a design for a bottle is standardized by the Glass Container Association, a family of bottles similar in shape but in a range of capacities is standardized at the same time. Thus, the blueprint for Boston Rounds (in the medicinal and toilet ware classification) gives specifications for bottles with capacities of ½, 1, 2, 3, 4, 6, 8, 12, 16, and 32 ounces, and the Plain Round Wide Mouth Food Container Jar is provided in capacities ranging from 4 to 107 fluid ounces.

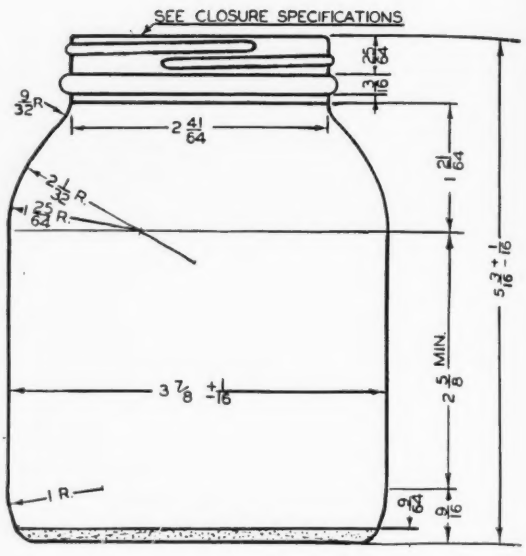
Trend to Standards Quickens

It is expected by the industry that defense conditions will increase the trend to standardization and the use of stock molds as opposed to the use of private molds, which are designed and owned by individual packers. Bottles made from these molds have the advantage of being distinctive, since they are reserved for the use of a single packer at least within his marketing area. The disadvantage is that they cost more to supply. In order to make the production run within reason economically, large numbers of the private

mold bottle must be run off at one time, and storage costs mount.

"For the duration of the present war effort and the industrial emergency created by the defense effort, private mold bottles will be difficult and sometimes impossible to produce," declares a spokesman for the Glass Container Association.

"The manufacture and maintenance of molds are expensive, requiring highly skilled machine labor now needed for armament work. The iron and steel involved are also difficult to obtain unless it can be shown that they are vital. Already the private molds for liquor ware are frozen to present designs, and it is probable that similar action will be taken on the molds for other lines."



Specifications for the 2-lb Tabl-Serv round preserve jar, typical of the standards adopted by the Glass Container Association of America

G.C.A. STANDARD GLASS CONTAINER 2 LB TABL-SERV ROUND PRESERVE JAR

NOTES

1. This container has been accepted by the War Department. All specifications as to container, closure & shipping cases must be rigidly adhered to when supplied for U. S. Government.
2. For identification purposes glass manufacturer's trade mark should be shown on bottom of container.
3. Tolerance for capacity, weight and body dimensions are to be in accordance with C. C. A. No. 1 Standard Tolerances.
4. Bottom to be stippled.
5. Full label space of 2⅝" to be maintained.

Technical Sub.-Com.	Approved April 17, 1941	Adopted as standard by GLASS CONTAINER ASSOCIATION OF AMERICA
V. L. Hall, Chairman		
D. M. Hanson J. D. Laird H. McDonald F. N. Peregoy G. M. Stuntz	Supersedes Dwg No.	Design and Specification Committee
J. R. Jackson, Secretary	2 lb Tabl-Serv Round Preserve Jar	Dwg No. C-760

National Bureau of Standards Reports on Fire Resistance

Fire tests carried out by the National Bureau of Standards in accordance with the American Standard Specifications for Fire Tests of Building Construction and Materials (A2-1934; ASTM C19-33) have furnished the data for fire resistance ratings for 64 different partition constructions, the Bureau announces. Results of the tests are published by the National Bureau of Standards in its Building Materials and Structures Report BMS71, just released. The report is available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 20 cents each.

CESA Registers Its Symbol

The Canadian Engineering Standards Association has registered its symbol as a protection against its unauthorized use. The Canadian symbol is a large C enclosing the letters ESA. In addition to registration of the symbol the letters CESA have also been registered as a word mark as a complete protection.

Size, Number of Sheets, and Ply To be Standard Data on Tissues

A standard method of marking boxes of facial cleansing tissue to give the user more complete and accurate information as to the contents of the package has been cooperatively developed by weights and measures officials and the manufacturers of facial cleansing tissue. Agreement on the new method of marking was brought about through a committee on which the weights and measures officials were represented by their Committee on Standards and Specifications, and the facial cleansing tissue manufacturers were represented by a committee from the Facial Tissue Division of the Tissue Association.

The agreement between these two groups covers a "declaration" of contents on each box as follows:

"The declaration shall include a statement of the single sheet count and of the 'tissue' count expressed in terms of the number of 'plys' or single sheets comprising a tissue, and the sheet size shall be specified. Statements of sheet count and tissue count shall be equally prominent and of the same size of lettering, and all three statements shall be in immediate juxtaposition, thus comprising a complete declaration. Wherever, on a carton or label, a statement of sheet count is made this shall be accomplished by the corresponding 'tissue' count and the sheet size. . . ."

An example of such a declaration is given as follows:

500 SINGLE SHEETS
250 TWO-PLY TISSUES
SIZE: 9″ x 10″

In addition to this statement as to sheets and plys, the manufacturers have volunteered to mark the size of the sheet on the box in the future. This has not been general practice in the past but the manufacturers believe that it is desirable for the sake of more complete consumer protection. The eventual result of the addition of the declaration as to size will be to bring about greater uniformity in the size of the sheets offered by the various manufacturers, announcement of the agreement declares.

Management Society Meeting Will Consider Standardization

Under the slogan "Standardization—Harmonizer of Human Effort," the Standardization Division of the Society for the Advancement of Management will hold a meeting December 5, 1941, at 11:00 a. m. in the Hotel Commodore, New York. This is one of the sessions to be held during the Annual Meeting of the SAM December 4 and 5. Revaluation of scientific management in the light of present conditions will be the general theme of the meeting. Special attention will be paid to the significance of the democratic method, as compared with the dictatorial attitude, in management.

The principal speaker at the standardization session will be Dr. D. F. Miner, George Westinghouse Professor of Engineering, Carnegie Institute of Technology, who will review the benefits derived by the Westinghouse Electric and Manufacturing Company from the systematic application of standardization as a distinct function of its management. Professor Miner formerly was in charge of the Westinghouse Company's standards department and still serves this firm as a consultant on problems of this kind.

Harold P. Westman, secretary, Institute of Radio Engineers, and chairman of the ASA Board of Examination, will preside at the meeting.

The discussion of Professor Miner's talk will be opened by John Gaillard, Mechanical Engineer, of the American Standards Association, and SAM vice-president in charge of Standardization.

Need Standards as Basis For "Informative" Advertising

Lack of standards is one reason why national advertisers use "informative" copy so little, the Committee on Consumer Relations in Advertising announced recently following an analysis of manufacturers' sales promotion material. Lack of agreement among consumer leaders as to what "informative" factors advertising copy should contain was given as the chief reason for this lack of information in advertising.

"For most products there has not been widespread agreement as to the exact points of product specification and performance which are most significant, what the tolerances are, or how information on these points shall be described or expressed," the Committee declared.

Except in a comparatively few cases, there is a lack of "universally accepted and scientifically feasible standards for the characteristics and performance qualities of goods," and without such standards, no group—consumers, advertisers, or government—can carry on a program of informative sales promotion, the Committee asserted.

ASA Library Receives New Foreign Standards

The following is a list of new and revised standards which have been received recently by the American Standards Association, and which are available to members for loan from the ASA Library.

Canada

Canadian Electrical Code, Part II—Definitions and General Requirements, Third Edition (C22.2 No. 0-1941); Isolating Switches (For High-Potential "Disconnect" Use) (C22.2 No. 58-1941)

Holland

Rubber hoses; Performance of tests (N166)

Classification and nomenclature of Soilsamples—Main classification (N209), More detailed classification of sand and gravel according to size of particles (N210), Methods of investigation of sand and gravel (N213)

Shipbuilding details; Shakles system Kenter (N231)

Letter Symbols for Applied Mechanics Concrete and Re inforced Concrete (N355)

Pipe conduits and accessories; Water meters (N367)

Steel Bends for Electrical Installations; For connection of $\frac{5}{8}''$ to 2" Plain Conduit (N437)

Cast-Iron Knees for Electrical Installations; For connection of $\frac{5}{8}''$ to 2" Plain Conduit (N438)

Drain-pipes; dimensions and specifications for test (N440)

Fire combating apparatus; Connecting fire engines to stand-pipes (N559)

Cement and lime; Sampling; Preliminaries for Chemical analyses (N619)

Cement and lime; Chemical analyses I (N620), Chemical analyses II (N621), Chemical analyses III (N622)

Annealed Electrolytic Copper Wire "Z" Binding Wire Copper Wire Stranded Conductors "Z"; Dimensions, Construction, Test Requirements (N699), General Prescriptions and Test (N700)

Pipe conduits and accessories; Spun iron pipes with spigot and socket (N772)

Gasmasks; Face-pieces (N893)

Copper, bronze and brass; General stipulations (N1113)

Bronze; Classification of types (N1115)

Brass; Classification of types (N1116)

Copper, bronze and brass; Regulations concerning chemical analyses (N1117)

Cast-bronze and cast-brass; Mechanical testing I (N1118)

Forging-bronze and forging-brass; Mechanical testing I (N1119)

Cast-bronze; Types and testing specifications (N1122)

Forging-bronze; Types and testing specifications (N1125)

Forging-brass; Types and testing specifications (N1127)

Sheet brass; Types and testing specifications (N1128)

Pipe-brass; Types and testing specifications (N1130)

Light Railways; Track spikes and Screw spikes (N1139)

Rubber pressure hoses for various purposes; Dimensions and specifications for testing (N1142)

Rubber pressure hoses for water; Heavy construction; Dimensions and specifications for testing (N1143)

Rubber hoses for use in laboratories; Dimensions and specifications for testing (N1149)

Rubber gas hoses; Dimensions and specifications for testing (N1150)

Rubber steam hoses; Dimensions and specifications for testing (N1157)

Technical drawings; Signs for press- and tractive springs (N1152)

Technical drawings; Signs for deviations of measures and for tolerances (N1153)

Bicycle Rims; Tire sizes and circumferences (N1162), Calibers (N1163), Measuring tapes (N1164)

Motorcycle Rims; Tire sizes and circumferences (N1165), Calibers (N1166), Measuring tapes (N1167)

Mineral Oils; Determination of flash points up to and including 50 C (N1168); Abel-Pensky apparatus (N1169)

Mineral Oils; Determination of flash points above 50 C (N1170); Pensky-Martens apparatus (N1171)

Mineral Oils; Flash point thermometers (N1172)

Mineral Oils; Determination of specific weight (N1173); Pycnometers (Recommended types) (N1174)

Construction Parts for Aeronautics; Crick Mounts (N1175)

Cinematography; Testing of safety film (N1185); Safety film; Oven for inflammability determination (N1186)

Cinematography; 35mm film and 16mm sound film (N1187)

Cinematography; 35mm film; Recording (N1188); 35mm film; Projection (N1189)

Cinematography; 16mm sound film; Recording (N1190); 16mm sound film; Projection (N1191)

Cinematography; 16mm silent film (N1192); 8mm film (N1193); Film Cores (N1195)

Wood screws (N1196)

Spring washers with rectangular section (N1197)

Enclosure for screw bolts with hexagonal head; Measures for socketwrench and enclosure (N1198)

Enclosure for screw bolts with triangular head; Measures for socketwrench enclosure and screwbolts (N1199)

Seamless copper tubes for water conduits (N1200)

Black castelled nuts with metric thread (N1231); with Whitworth thread (N1232)

Mineral Oils; Determination of cloud point (N1235); Cloud point thermometer (N1236)

Construction Parts for Aeronautics; Tolerances (N1237)

Rubber conveyor belting; Dimensions and specifications for testing (N1239); Performance of tests (N1240)

Socket head cap screws with metric thread (N1241); with Whitworth thread (N1242)

Square washers (N1243)

Stop cock for water conduits; Review (N1256)

Tap cock for water conduits; Review (N1257)

Angle stop cock; Body, tail for lead coupling nut and packing ring (N1259)

Lavatory tap; Body, jam nut and washer (N1261)

Stop and tap cock for water conduits; Ordinary tap, smooth top, packing ring (N1262)

Springwashers; Specifications for testing (N1272)

Colors for lac-paints (N902)

Rules for electrical heavy-current installations for low-voltage in dwelling-houses, shops, buildings, hotels, schools, theaters, farms, etc. (N1010)

Standards Committee Acts for ASTM On New Tentative Standards

IN addition to approval of 34 new tentative standard specifications and tests, as well as 15 revised tentative specifications, the American Society for Testing Materials' Committee E-10 on Standards at its recent meeting elected J. R. Townsend chairman. Mr. Townsend is Materials Standards Engineer of the Bell Telephone Laboratories, Inc. Committee E-10 is empowered to act for the Society on approval of new tentative standards and revisions of tentative standards in the interval between meetings of the Society.

A summary of the new tentative standards approved by Committee E-10 on behalf of the Society is given below:

Two new tentative specifications developed in Committee A-1 on Steel covering boiler and superheater tubes were approved. One covers carbon-molybdenum material fabricated by electric-resistance welding (A 250-41 T), the other covers four grades of austenitic steel fabricated either by electric-resistance or the atomic-hydrogen arc welding process (A 249-41 T). Each of these specifications sets up recognized flattening, flaring, and hardness tests, and also standard hydrostatic tests.

Nine new tentative standards completed by Committee B-2 on Refined Nickel and Nickel Alloys were approved:

- Nickel, Nickel-Copper Alloy and Nickel-Chromium-Iron Alloy Seamless Condenser Tubes and Ferrule Stock (B 163-41 T)
- Nickel-Chromium-Iron Alloy Cold-Drawn Pipe and Tubing (B 167-41 T)
- Nickel Cold-Drawn Pipe and Tubing (B 161-41 T)
- Nickel-Chromium-Iron Alloy Rods and Bars (B 166-41 T)
- Nickel Plate, Sheet and Strip (B 162-41 T)
- Nickel Rods and Bars (B 160-41 T)
- Nickel-Chromium-Iron Alloy Plate, Sheet and Strip (B 168-41 T)
- Nickel-Copper Alloy Rods and Bars (B 164-41 T) and
- Nickel-Copper Alloy Cold-Drawn Pipe and Tubing (B 165-41 T)

All of these materials have been used in pressure vessels, for naval equipment, and in related categories, and both the Government and commercial interests cooperated in the development of the specifications.

Committee B-5 on Copper and Copper Alloys, which has been cooperating closely with the Army Ordnance, and other divisions of the Government in connection with national defense work, was responsible for two new tentative specifications approved by Committee E-10 giving standard requirements for phosphor bronze wire (B 159-41 T) and rods, bars, and shapes (B 139-41 T).

Two new specifications, one covering sodium chloride (D 632-41 T) for which no specifications at present are in existence, another for slow-setting emulsified asphalt (D 631-41 T), which is widely used throughout the United States, were submitted by Committee D-4 on Road and Paving Materials, and approved by Committee E-10.

NBS Prepares Correction Tables on Tar

Another recommendation approved by the Standards Committee was presented jointly by Committees D-4 and D-8 on Bituminous Waterproofing and Roofing Materials. It covers volume correction tables for tar and coal-tar pitch which were prepared by the National Bureau of Standards as a convenient method for reducing volumes of road tar and coal-tar pitch to the basis of 60 F when extreme accuracy is not required.

Six new tentative methods of test for properties of paper and related products were completed by Committee D-6 on Paper and Paper Products and have now been approved as ASTM tentative methods. They cover:

Proposed Tentative Methods of Test for:

- Folding Endurance of Paper (D 643-41 T)
- Quantitative Determination of Moisture in Paper (D 644-41 T)
- Thickness of Paper and Paper Products (D 645-41 T)
- Basis Weight of Paper (D 646-41 T)

Proposed Tentative Method for Conditioning Paper Board and Fiber Boxes for Testing (D 641-41 T)

Proposed Tentative Method of Compression Tests on Corrugated and Solid Fiber Boxes (D 642-41 T)

Work by this committee on corrugated and solid fiber boxes has resulted in the acceptance of a new ASTM tentative standard for compression tests. In much of its work, this technical committee has cooperated closely with the Technical Association of the Pulp and Paper Industry and some of the TAPPI methods have formed the basis of ASTM standards.

A number of recommendations presented by

ASTM Registers Its Seal

The American Society for Testing Materials has registered its seal as a trade mark in the U.S. Patent Office. The use of the seal will now be reserved solely for publications issued by the Society.

Committee D-9 on Electrical Insulating Materials were approved, including a new test for product uniformity of phenolic laminated sheet (D 634-41 T) which was prepared in cooperation with the Navy Department. The methods cover the procedures for six tests which serve to check the uniformity of the properties of a particular type or grade of phenolic laminated material produced by a particular manufacturer, and to make evident variations in portions of one particular shipment, or in shipments made from time to time. These methods do not in themselves necessarily indicate the quality of a material, or in what degree it may be suited to a particular application. Tests covered include: thread count and ply thickness; acetone extractable matter; water absorption; dielectric strength parallel with laminations after immersion in water; hot Rockwell hardness; and density.

Two new test methods were approved on the recommendation of Committee D-11 on Rubber Products covering Sampling and Testing of Rubber Latex (D 640-41 T) and Testing Asphalt Composition Battery Containers (D 639-41 T). In addition, an emergency alternate modification was accepted to the Standard Specifications for Insulated Wire and Cable (D 27-41). This is the first emergency revision in ASTM standards and was occasioned by the difficulty manufacturers of wire and cable are having in procuring the type of sheeting specified. The standard requirements as compared with the new alternate requirements are:

	Lb per sq yd	*Yd per lb 40 in. width*	*Thread Count*
ASTM D 27	0.25	3.60	56 x 60
Alternate (*a*)	0.225	4.00	60 x 52
Alternate (*b*)	0.210	4.30	56 x 48

There is a shortage of 3.60 sheeting and while there will still be a shortage of material, the alternates will provide some relief, it is expected. At the same time, the ASTM announces, the quality of the cables will not be altered because of the use of alternates and the production of the material can continue under ASTM specifications.

One of the ASTM committees which has intensified its standardization program, particularly to help in connection with national defense problems, has been Committee D-20 on Plastics. In addition to several new standards approved this year at the ASTM annual meeting, other new standards completed by this committee have now been approved by Committee E-10 for the Society:

Flammability Test for Plastic Materials Thicker than .051 in. (D 635-41 T)

Test for Surface Irregularities of Flat Transparent Plastic Sheets (D 637-41 T)

Test for Diffusion of Light by Plastics (D 636-41 T)

Test for Tensile Properties of Plastics (D 638-41 T)

The ASTM requirements for "industrial" thermometers, which are frequently specified in ASTM test methods, have now been issued in compact form. The latest revision involves the requirements for aniline point and titer test thermometers. The latter test requirements have been prepared in cooperation with ASTM Committee D-12 on Soaps and Other Detergents and also the Fat Ananlysis Committee of the American Oil Chemists' Society and the American Chemical Society.

ASTM Plans to Speed Action On Defense Standards

A procedure has been set up by the American Society for Testing Materials to provide for prompt approval of emergency requirements in its standards in view of present conditions. Highspots of this procedure are:

A request is referred, through the standing committee concerned, to an appropriate subcommittee or subgroup, for consideration of an emergency standard.

After development of the proposed standard, it will be passed upon by the chairman of the standing committee.

Following endorsement by the chairman of the standing committee, the proposed standard will be referred to ASTM Committee E-10 on Standards. This committee is authorized to promulgate the new standard on behalf of the Society.

National Safety Council Names Alternate Representative

H. R. Bixler, Industrial Relations Department, Union Carbide Company, has been named by the National Safety Council to act as its alternate representative on the ASA Standards Council. R. L. Forney is the Council's principal representative.

New Association and Government Standards

(See "ASA Standards Activities", page 310, for new American Standards and progress on ASA projects)

Since the publication of the October issue of INDUSTRIAL STANDARDIZATION, the ASA Library has received for its classified files copies of standards and specifications from the organizations listed below.

These standards may be consulted by ASA Members at the ASA Library.

Anyone desiring copies for his own use should write direct to the organization issuing the standard.

Associations and Technical Societies

Radio Manufacturers Association (P.O. Drawer 431, Emporium, Pa.)

High Frequency Circuit Switches, Sheets 415 and 415A. August 1941 Replaces issue of January 1938

Underwriters' Laboratories, Inc. (161 Sixth Avenue, New York, N. Y.)

Standard for Edison-Base Lamp-Holders. Third edition. March, 1941.

United States Government

National Bureau of Standards (Washington, D. C.)

Commercial Standards

Approved by the Standing Committee and Circulated to Industry

Electrical Supplementary Driving and Passing Lamps for Vehicles (After Market) TS-3137

In Print (Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

Portable Electric Drills (Exclusive of High Frequency) CS93-41

Taps and Dies Revision of July 1, 1941 (Replacing revision of Jan. 1, 1939)

(A list of Commercial Standards as revised to Oct. 1, 1941, is available.)

Simplified Practice Recommendations

Accepted by Industry and Promulgated

Food Service Equipment R182-41

In Print (Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

Nonferrous Range Boilers R181-41

Federal Specifications Executive Committee (U. S. Treasury Department, Washington, D. C.)

Federal Specifications

(Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

The date after the title of the specification indicates when the specification becomes effective.

Lamps; electric, incandescent, large, tungsten-filament (1942 Supplement) W-L-101d September 1, 1941

Lamps; electric, incandescent, miniature tungsten-filament (1942 Supplement and Amendment-3) W-L-111b September 1, 1941

Lockers; clothes, steel (Amendment-2) AA-L-486 November 1, 1941

Mashers, Potato; wood (New) LLL-M-116 December 1. 1941

Matting; rubber (Amendment-2) ZZ-M-71 November 1, 1941

Matting; rubber (for use around electrical apparatus or circuits not exceeding 3,000 volts to ground) (Amendment-2) ZZ-M-81 November 1, 1941

Oats; rolled or flaked (Amendment-1) N-O-41a November 1, 1941

Paint; ready-mixed and semipaste, exterior, chrome-green (Superseding TT-P-71) TT-P-71a November 1, 1941

Pans, bake and roasting; steel (New) RR-P-55 December 1, 1941

Paper; articulating (New) GG-P-106 November 1, 1941

Penholders; wood (Superseding GG-P-181) GG-P-181a October 1, 1941

Pins; office (Amendment-1) FF-P-401a November 1, 1941

Pins, Rolling; wood (New) LLL-P-381 December 1, 1941

Radioactive-Luminous-Compound and adhesives (New) TT-R-58 November 1, 1941

Spoons, Mixing; wood (New) LLL-S-614 December 1, 1941

Tableware; Nickel-Alloy (New) RR-T-46 December 1, 1941

Tires and tubes (inner); bicycle (Superseding ZZ-T-401) ZZ-T-401a November 15, 1941

Valves, cylinders; oxygen (for standard industrial cylinders) (Amendment-1) WW-V-61 November 1, 1941

Vinegar (Amendment-1) Z-V-401a November 1, 1941

Wood-Preservative; anthracene-oil (for) brush, spray, or open-tank treatment (Superseding part of TT-W-561a) TT-W-531 December 1. 1941

Wood-Preservative; celcure (acid-cupric-chromate) (New) TT-W-546 December 1, 1941

Wood-Preservative; chromated-zinc-chloride (New) TT-W-551 December 1, 1941

Wood-Preservative; coal-tar-creosote (Superseding TT-W-556) TT-W-556a December 1. 1941

Federal Specifications (Continued)

Wood-Preservative; coal-tar-creosote (crystal-free), (for) brush, spray, or open tank treatment (Superseding part of TT-W-561a) TT-W-560 December 1, 1941

Wood-Preservative; creosote-petroleum-solution (New) TT-W-568 December 1, 1941

Wood-Preservative; recommended treating practice (Superseding TT-W-571a) TT-W-571b December 1, 1941

Wood-Preservative; Wolman-salt (tanalith) (New) TT-W-573 December 1, 1941

Wood-Preservative; zinc-chloride (Superseding TT-W-576) TT-W-576a December 1, 1941

Wood-Preservative; zinc-meta-arsenite (ZMA) (New) TT-W-581 December 1, 1941

Emergency Alternate Federal Specifications

Bronze, Aluminum; Bars, Plates, Rods, Shapes, Sheets, and Strips E-QQ-B-666

Bronze, Aluminum; Castings E-QQ-B-671

Bronze, Manganese; Bars, Forgings, Plates, Rods and Shapes E-QQ-B-721a

Bronze, Phosphor; Bars, Plates, Rods, Shapes, Sheets, and Strips E-QQ-B-746

Iron and Steel; Sheet, Black and Zinc Coated (Galvanized) E-QQ-I-696

Nickel-Silver (German-Silver); Bars, Plates, Rods, Shapes, Sheets, and Strips E-QQ-N-321

Terne-Plate (Roofing Tin) E-QQ-T-201

Varnish; interior E-TT-V-71a

Varnish; mixing (for) aluminum paint E-TT-V-81a

Varnish; spar, water-resisting E-TT-V-121a

Cards; guide (card-size) E-UU-C-76

Aluminum-Alloy (aluminum - copper - magnesium - manganese); bars, rods, shapes, and wire E-QQ-A-351a

Scissors and Shears E-GGG-S-101b

Aluminum-Alloy (A1-53) (aluminum-magnesium-silicon-chromium); bars, rods, shapes, and wire E-QQ-A-331a

Aluminum-Alloy (aluminum - chromium - magnesium - silicon); plates and sheets E-QQ-A-334

Emergency Alternate Federal Specifications (Continued)

Aluminum-Alloy (A1-17) (aluminum-copper-magnesium-manganese); plates, sheets, and strips E-QQ-A-353a

Aluminum-Alloy (A1-24) (aluminum-copper-magnesium 1.5 percent-manganese); plates, sheets, and strips E-QQ-A-355

Aluminum-Alloy; forgings, heat-treated E-QQ-A-367a

Aluminum-Base-Alloy; die-castings E-QQ-A-591

Aluminum-Base-Alloy; permanent-mold-castings E-QQ-A-596

Aluminum-Base-Alloys; sand-castings E-QQ-A-601

Cans; sprinkling (superseding E-RR-C-94, dated Aug. 7, 1941) E-RR-C-94

Tubing, Aluminum (A1-2); round, seamless E-WW-T-783a

Tubing, Aluminum-Alloy (aluminum-copper-magnesium-manganese); round, seamless E-WW-T-786

Tubing, Aluminum-Alloy (A1-3) (aluminum-manganese); round, seamless E-WW-T-788a

Cloth; wire, screen E-RR-C-451a

Roofing; asphalt-prepared, smooth-surfaced E-SS-R-501

Paper; mimeograph (superseding E-UU-P-388a, dated Oct. 3, 1941) E-UU-P-388a

Food and Drug Administration (Federal Security Agency, Washington, D.C.)

Proposed Standards for Macaroni and Spaghetti

U. S. Marketing Service (U. S. Department of Agriculture, Washington, D. C.)

U. S. Standards for Beans, Revised (Proposed) Lima HHH-B-141; String HHH-B-156

U. S. Standards for Citrus Fruit: Grapefruit Y-G-681; Lemons Y-L-231a; Oranges Y-O-661a

U. S. Standards for Tangerines Y-T-96

U. S. Standards for Bunched Shallots

Tentative U. S. Standards and Grades for Dressed Turkeys, Revised PP-T-791a

OPA Committee Will Check On Quality of Consumer Goods

How to keep the American consumer informed of quality changes in consumer goods resulting from substitutions, cost increases, and manufacturing simplification programs during the defense emergency will be explored by a newly formed advisory panel on Consumer Goods Distribution and Use, which was set up recently by the OPA to work with the Standards Section of the Consumer Division of the Office of Price Administration.

This panel, consisting of representatives of manufacturers, retailers, women's organizations, and consumer cooperatives, will supplement the two other standards panels previously announced by Miss Harriet Elliott, Associate Administrator in charge of the Consumer Division of OPA. These groups will advise the Consumer Division on the use of standards, grades, and quality-identifying labels as measures for consumer protection and conservation of industrial resources during the emergency.

Invited to attend the first meeting of the Consumer Goods Distribution and Use Panel were: Roger Walcott, secretary, National Consumer Retailer Council; F. S. Blanchard, Director of Public Relations, Pacific Mills; Murray Lincoln, president, Cooperative League of the USA; Lansing P. Shields, vice-president, Grand Union Company; Mrs. Harriet R. Howe, American Home Economics Association; Miss Faith Williams, chief, Cost of Living Division, Bureau of Labor Statistics; Bruce MacLeish, Carson, Pirie and Scott; Mrs. Patrick Henry Adams, Maplewood, New Jersey; C. E. McCarthy, vice-president, Allied Purchasing Corporation; Harold Brightman, vice-president, L. Bamberger and Company; Edward L. Greene, general manager, National Better Business Bureau.

Cooperatives to Use Standards For All Grocery Products

BREAKING into the labeling field in a big way, National Cooperatives, Inc., have decided to set up their own grade standards for all grocery products in their line for which no government standards exist. Among the first to be developed will be standards for canned pineapple, dry macaroni products, preserves, soaps, spices, and strained vegetables.

National Cooperatives is the buying federation which purchases goods to be sold under the Co-Op brand by affiliated cooperative wholesales. Although the Co-Op canned goods have never been packed under continuous government inspection, the brand has held to government standard grading on every item handled for which an official standard exists. Some of these grade-label items include applesauce, apricots, asparagus, lima beans, pork and beans, string beans, wax beans, blackberries, carrots, cherries, corn, figs, fruit cocktail, grapefruit, loganberries, peaches, pears, peas, plums, raspberries, sauerkraut, and tomatoes.

Group Owns Test Laboratories

Five cooperative wholesales, at Chicago, Minneapolis, New York, North Kansas City, and Superior, Wisconsin, handle large volumes of groceries supplied through National Cooperatives. Test laboratories at New York and Superior are owned and operated by the group, and it is expected by the grocery buyers and managers that the laboratories will have a good deal of research to do in order to arrive at the necessary facts for the new labeling program.

The plan of the cooperatives is to designate their new grades numerically rather than by letter in order to avoid conflict with the federal A-B-C grades. It is planned to have only two grades per commodity: superior and standard, which will be marked 1 and 2 respectively and carry red labels and blue labels. Where the customers of the cooperatives do not require such high quality, however, these items may step down one grade and color.

Labeling Is Based on Standards

An example of the type of standard set up by the cooperatives as a basis for their grade-labeling is cited in *Business Week*, October 18.

"Soaps, which the co-ops obtain from major manufacturers, afford an example of the quality they seek. Their current formula for red-label granulated soap is: soap 85 per cent; tetrasodium pyrophosphate (water breaker) 12 per cent; alkaline builder, silica base, 3 per cent. The Co-Op second-level granulated soap formula coincides precisely with the analysis of one of the biggest-selling nationally-advertised brands: soap 73 per cent; tetrasodium pyrophosphate 9 per cent; alkaline builder 18 per cent. The co-ops claim that alkaline builder, the cheapest ingredient, is less useful beyond 3 per cent, serves rather to add weight than cleansing power.

"The co-ops are shooting for the same mark on macaroni products: Co-Op Grade 1 to be 100 per cent semolina, hard durum wheat, rich ivory color; Grade 2, to be made from the cheaper standard macaroni flour with lower durum content and the typical gray-white color."

Standardization Extends To Sport Field

The principle of standardization, already accepted in the industrial and consumer fields, has now spread to the field of sports, specifically basketball.

"What needs to be standardized is the size of courts, backboards, baskets, and balls," declares Coach Paul Mooney, of Columbia University.

At present the rules call for court measurements of 42 by 75 ft. minimum to 50 by 94 maximum; a backboard made of wood, glass, or steel; any kind of basket, including one with a stagger traffic-light system; and several types of balls.

Refrigeration Engineers List Standards Available

Standards for use in connection with refrigeration and air conditioning are listed and described in a pamphlet issued recently by the American Society of Refrigeration Engineers. Standards for pressure piping, mechanical refrigeration, and other general standards useful in this field which have been approved by the American Standards Association are included. Copies of the pamphlet, *Standards for Refrigeration*, are available from the American Society of Refrigeration Engineers, 37 West 39th Street, New York, without charge.

ICC Recommends Action On Motor Vehicle Standards

NATIONAL uniformity is to a great extent impracticable in connection with state and local regulations for sizes and weights of motor vehicles, the Interstate Commerce Commission reported to Congress August 14. The report was the result of a study of state limitations in sizes and weights of motor vehicles authorized by the Motor Carrier Act of 1935 and the Transportation Act of 1940.

State limitations are to a considerable extent more severe than is necessary for the proper protection of the highways, operating as an obstacle to the flow of interstate traffic, making motor transportation more costly, and resulting in impaired service to the public, the study showed. As a result of the study the Commission concluded that these conditions create a need for Federal intervention. The War Department, the Department of Agriculture, and the Public Roads Administration as well as for-hire and private-motor carriers, to a great extent, favor Federal intervention, but opposition to it comes from the railroads and the States, the Commission reports.

Authority to fix size and weight standards, as need arises, should be vested in the Interstate Commerce Commission, the Commission recommends. The Commission suggests that it be authorized to obtain technical information on road-building problems from the Public Roads Administration, the Federal agency most concerned with road matters, and from the highway department of the State concerned.

Although the Commission finds that national uniformity of standards would be impracticable if applied generally and by direct action, it believes it should be given authority to set up uniform standards after complaints attacking limitations on motor vehicles have been filed by a responsible party against a State or political subdivision. State limitations would thus continue to apply until superseded by order of the Interstate Commerce Commission.

Enforcement of Federal regulations should, as far as possible, be conducted concurrently by Federal and State agencies, the Commission recommends.

Standardization Not Regimentation

MANY people in industry and trade, and even some engineers and designers, misunderstand the relation of standards and specifications to design, and build up for themselves a frightening concept of "uniforms and manufacturers forced to produce identical products," Dickson Reck, assistant chief of the Standards Section, OPA Consumer Division, told the American Designers' Institute October 3.

"The misconception arises," Mr. Reck explained, "from the fact that these people have confused the concept of standards with regimentation and uniformity. . . . There are a number of reasons why it is not only inaccurate but involves a fundamental misunderstanding of the origin, use, and purpose of standards to assume that their development and use means regimentation."

He outlined these reasons as follows:

1. There are many types of standards which are very useful and which have no direct relationship to design.

2. Most commodity standards cover only certain important qualities or factors and leave complete freedom for all desirable variety of design.

3. Even where commodity specifications or standards are intended to cover a wide scope they do not necessarily limit design, but allow for all desirable varieties.

Confusion of the idea of standards with that of regimentation shows misunderstanding of the purpose of standards

Standards make possible the best use of production facilities

4. Long experience has shown that the proper procedures for developing standards are both dynamic and democratic, dynamic since they provide for continuous and significant revision, and democratic since maximum usefulness requires that they provide for representation of all parties at interest, consumers, distributors, industry, and government.

5. The principal uses for the standards that have been proposed is to make possible the best utilization of productive facilities for the manufacture of high-quality, low-priced commodities. That is to say, the program will be useful to conserve materials and other resources important to defense and to supply information which will faithfully relate price to quality, at a time when widespread changes are of necessity being made.

Standard Welding Procedure To Assure Uniform Results

Standard procedure to be followed to assure uniform satisfactory results in welding is outlined in a Standard Qualification Procedure, published in the July issue of the *Welding Journal*.

The quality of arc- and gas-welded joints is determined by the specific welding procedure used and by the ability of the welding operator to apply that procedure, the foreword to the standard explains. Predictable results as to the physical properties and soundness of such joints can be secured only by adherence to a procedure of welding that has been thoroughly investigated.

The rules given in the standard apply only to the manual application of the arc- and gas-welding processes, and to those ferrous metals which in their unwelded condition will meet the requirements of the guided bend test prescribed therein.

The standard is in two parts, Part I on Procedure Qualification and Part II on Operator Qualification. An Appendix gives recommended forms of procedure specifications. Specific requirements provide for limitation of variables, base material and its specification, the position and number of test welds, and the method of testing specimens. Many diagrams are included to show positions of test welds and dimensions on different types of specimens.

The standard was prepared by the Committee on Standard Qualification Procedure and Committee on Grouping of Materials for Procedure and Operator Qualification of the American Welding Society, and approved by the Executive Committee in April.

Copies of the Standard Qualification Procedure are available from the American Welding Society, 33 West 39th Street, New York, at 25 cents each.

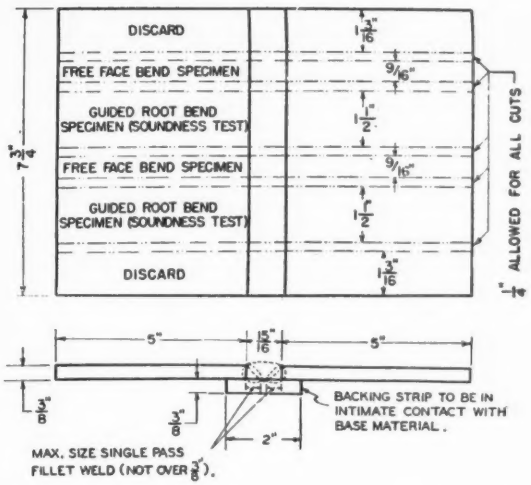

DISCARD
FREE FACE BEND SPECIMEN
GUIDED ROOT BEND SPECIMEN (SOUNDNESS TEST)
FREE FACE BEND SPECIMEN
GUIDED ROOT BEND SPECIMEN (SOUNDNESS TEST)
DISCARD
1" ALLOWED FOR ALL CUTS
5"
5"
BACKING STRIP TO BE IN INTIMATE CONTACT WITH BASE MATERIAL.
MAX. SIZE SINGLE PASS FILLET WELD (NOT OVER 3/8").
2"

Figure 5 (above) from the new standard for welding procedure shows a test weld for free-bend and soundness tests

U. S. "Cracks Down" on Fraudulent Grades

The U. S. Department of Agriculture is catching up with dealers who have their products graded and then substitute inferior goods for the graded product. Delivery of 40 cases of eggs under a fraudulent stamp recently resulted in one-year debarment of a New York City butter and egg company from the privilege of having its eggs officially graded and certified by the Department.

An investigation showed that the company had had 40 cases of eggs inspected and passed by an official grader of the U. S. Department of Agriculture for delivery to the U. S. Veterans' Administration Facility. The inspected eggs were officially stamped. The eggs received by the Veterans' Administration Facility under the contract bore fraudulent stamps and the substituted eggs delivered were inferior to those officially graded.

In releasing its findings in the case the Department of Agriculture made this observation: "Obtaining inspection and certification of products by disinterested graders is a privilege conferred by the Government in an effort to aid commerce by providing marks of quality upon which all may rely. Those receiving the service profit and are benefited by the reliance placed on those marks by customers and prospective customers. Such benefits do not accrue without corresponding duties. On those who are privileged to receive grading service, there is a high obligation to see that they and all of their employees and agents do nothing that might have the effect of lessening the faith that may justly be placed in Government certifications of grade and quality."

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of Industrial Standardization and Commercial Standards Monthly, published once a month at New York, N. Y., for Oct. 1, 1941.
State of New York, County of New York, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Ruth E. Mason, who, having been duly sworn according to law, deposes and says that she is the editor of the Industrial Standardization and Commercial Standards Monthly and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, American Standards Association, 29 West 39th St., New York, N. Y. Editor, Ruth E. Mason, 29 West 39th St., New York, N. Y. Managing Editor, none. Business Managers, none.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) American Standards Association, 29 West 39th St., New York, N. Y. R. E. Zimmerman, President (Vice-Pres., U. S. Steel Co.), 29 West 39th St., New York, N. Y. P. G. Agnew, Secretary, 29 West 39th St., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only.)

RUTH E. MASON,
Editor.

Sworn to and subscribed before me this 29th day of September, 1941.

LYDA I. SJOHOLM,
Notary Public.
(Seal)
New York Co. No. 1701,
Bronx Co. No. 311.
(My Commission expires March 30, 1943.)

National Electrical Code Is Interpreted

A new edition of the pamphlet, *The National Electrical Code—a Description of Its Purpose and the Manner in Which It Is Formulated*, was issued in September by the International Association of Electrical Inspectors.

In addition to a description of the methods and procedure by which the Code is kept up-to-date, and its history, the booklet includes a section on official interpretations.

Copies may be obtained from V. H. Tousley, secretary, IAEI, 612 N. Michigan Avenue, Chicago.

How Chinese Tax Increases Changed Standard Measures

"Chinese weights and measures were increased slowly after 9 A.D. until the Chinese foot, formerly 9.094 English inches, is now 14.1 inches, and the 'chin' (unit of weight), formerly equivalent to 8.6 ounces now weighs one and a third pounds. One of the reasons is interesting: 'Taxes in grain were paid in measures of capacity, and those in silk were paid in bolts of established length and width. By the ingenious scheme of officially increasing standard measures, customary taxes could be increased without altering the tax structure."

—*From "Nature Notes"*, January, 1941.

Canadian Rivet Standard Based on American Standards

The main features of the American Standard Specifications for Tinners, Coopers' and Belt Rivets (B18g-1928) as well as the American Standard for Small Rivets (B18a-1927) are to be included in a new Canadian standard on Standard Dimensions for Small Rivets, it was decided at a recent meeting of the Canadian Engineering Standards Association's Panel on Small Rivets. A table of head tolerances using American Standard dimensions as "mean" values is being prepared for consideration as the basis of the Canadian Standard.

ASA Standards Activities

Approved Standards Available Since Publication of Our October Issue

Acme and Other Translating Threads American Standard B1.3-1941 45¢

Grinding, Polishing and Buffing Equipment Sanitation American Standard Z43-1941 60¢

Standards Approved Since Publication of Our October Issue

Manhole Frames and Covers for Subsurface Structures American Standard A49.1-1941

Gypsum (ASTM C22.25) (Revision of A49.1-1933) American Standard A49.1-1941

Standards Approved (Continued)

Impact Resistance of Electrical Insulating Materials, Methods of Test American Standard C59.11-1941

Black and Hot-Dipped Zinc-Coated (Galvanized) Welded Seamless Steel Pipe for Ordinary Uses (ASTM A120-36) (Revision of G8.7-1937) American Standard G8.7-1941

Free-Cutting Brass Rod for Use in Screw Machines (ASTM B16-29) (Revision of H8-1934) American Standard H8-1941

Copper Water Tube (ASTM B88-39) (Revision of H23.1-1939) American Standard H23.1-1941

Zinc Oxide (ASTM D79-39) (Revision of K22-1939) American Standard K22-1941

Basic Carbonate White Lead (ASTM D81-38) (Revision of K23-1938) American Standard K23-1941

Red Lead (ASTM D83-39) (Revision of K24-1939) American Standard K24-1941

Mineral Iron Oxide (ASTM D84-40) (Revision of K25-1940) American Standard K25-1941

Lampblack (ASTM D2.09-30) (Revision of K26-1937) American Standard K26-1941

Chrome Yellow (ASTM D211-40) (Revision of K-27-1940) American Standard K27-1941

Reduced Chrome Green (ASTM D213-40) (Revision of K-28-1940) American Standard K28-1941

Prussian Blue (ASTM D261-40) (Revision of K29-1940) American Standard K29-1941

Reduced Para Red (ASTM D264-40) (Revision of K31-1940) American Standard K31-1941

Bone Black (ASTM D210-30) (Revision of K36-1937) American Standard K36-1941

Chrome Oxide Green (ASTM D263-40) (Revision of K37-1940) American Standard K-37-1941

Titanium Dioxide Pigments (ASTM D476-39) (Revision of K45-1939) American Standard K45-1941

Basic Sulfate White Lead (ASTM D82-38) American Standard K47-1941

Blue Lead: Basic Sulfate (ASTM D405-38) American Standard K48-1941

C. P. Para Red Toner (ASTM D475-40) American Standard K49-1941

C. P. Zinc Yellow (Zinc Chromate) (ASTM D478-40) American Standard K50-1941

Alkalinity or Acidity of Pigments, Methods of Test (ASTM D278-31) American Standard K51-1941

Bleeding of Pigments, Methods of Test (ASTM D279-31) American Standard K52-1941

Hygroscopic Moisture (and Other Matter Volatile Under the Test Conditions) in Pigments, Methods of Test (ASTM D280-33) American Standard K53-1941

Oil Absorption of Pigments, Methods of Test (ASTM D281-31 American Standard K54-1941

Acetone Extract in Dry Lampblack and Dry Bone Black, Methods of Test (ASTM D305-31) American Standard K55-1941

Tinting Strength of White Pigments, Methods of Test (ASTM D332-36) American Standard K56-1941

Mass Color and Tinting Strength of Color Pigments, Methods of Test (ASTM D387-36) American Standard K57-1941

Yellow and Orange Pigments Containing Chromium Compounds, Blue Pigments, and Chrome Green, Methods of Chemical Analysis (ASTM D126-36) American Standard K58-1941

Dry Mercuric Oxide, Methods of Chemical Analysis (ASTM D284-33) American Standard K59-1941

Carbon Residue of Petroleum Products, Methods of Test (ASTM D189-41) (Revision of Z11.25-1939) American Standard Z11.25-1941

Distillation of Gas Oil and Similar Distillate Fuel Oils, Methods of Test (ASTM D158-41) (Revision of Z11.26-1938) American Standard Z11.26-1941

Distillation of Crude Petroleum, Methods of Test (ASTM D285-41) (Revision of Z11.32-1936) American Standard Z11.32-1941

Distillation of Plant Spray Oils, Methods of Test (ASTM D447-41) American Standard Z11.43-1941

Vapor Pressure of Petroleum Products, Methods of Test (ASTM D323-41) American Standard Z11.44-1941

Calculating Viscosity Index, Method (ASTM D567-41) American Standard Z11.45-1941

Conversion of Kinematic Viscosity to Saybolt Universal Viscosity, Method (ASTM D446-39) American Standard Z11.46-1941

Gas Water Heaters, Approval Requirements (Revision of Z21.10-1938) American Standard Z21.10-1941

Attachable Gas Water Heating Units, Listing Requirements (Revision of Z21.26-1938) American Standard Z21.26-1941

Gas Counter Appliances, Approval Requirements American Standard Z21.31-1941

Standards Now Being Considered by Standards Council for ASA Approval

Keyways for Holes in Gears B6.4

Cast-Iron Pipe Flanges and Flanged Fittings, Class 250 (Revision of B16b-1928)

Safety Code for Jacks B30

Gage Blanks (CS 8-41) Revision of B47-1933)

Protection of Structures Containing Inflammable Liquids and Gases—Part 3 of Code for Protection Against Lightning (From status as American Tentative Standard to American Standard) C5, Part 3

Dry Cells and Batteries (Revision of C18-1937)

Rubber Gloves for Electrical Workers (ASTM D120-40) C59.12

Sun Glass Lenses (CS 78-39; CS 79-39)

Tubular Sleeving and Braids, Methods of Testing and Tolerances (ASTM D354-36) (Revision of L13-1941)

Use of Explosives in Anthracite Mines, Proposed American Recommended Practice M27

Drinking Fountains Z4.2

Safety Code for Laundry Machinery and Operations (From status as American Tentative Standard to American Standard) Z8

Graphical Symbols for Use on Drawings in Mechanical Engineering (Revision of Z14.2-1935) Z32.11

Public Approval and Certification Procedures Z34

Standard Withdrawn

Knock Characteristics of Motor Fuels, Method of Test (ASTM D357-40) Z11.37-1940

Defense Emergency Standards

Standard Approved Since Publication of Our October Issue

Allowable Concentration of Cadmium Z37.5

Standards Under Way

Automatic Refrigerators B38

Allowable Concentration of Acetone Z37

Allowable Concentration of Azides, Lead and Sodium Z37

Allowable Concentration of Ether Z37

Allowable Concentration of Manganese Z37

Allowable Concentration of Tetryl Z37

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